

ABSTRACT

A semiconductor device is improved in reliability by suppressing the electric-field concentration at a top edge of a trench or the leak current at a bottom edge thereof. A first thermal oxide film is formed by carrying out low-temperature wet oxidation at a silicon substrate heating temperature of approximately 950 °C, extending from over a bottom surface of the trench formed in a main surface of a silicon substrate to an intermediate point on a sidewall of the trench. Thereafter, a second thermal oxide film is formed by carrying out high-temperature dry oxidation at a silicon substrate heating temperature of approximately 1100 °C, extending from the intermediate point to over the main surface of the silicon substrate outside the trench.